CERTIFICATE
of EMC Compliance

Type of equipment: DVR CARD

Model Name: GV2008

Report No: EMC-FCC-0350

Applicant : GeoVision Inc.

Address : 12Fl., No. 316, Sec. 1, Neihu Rd., Neihu Chiu, Taipei, Taiwan 114, R.O.C

Manufacturer: GeoVision Inc.

Address : 12Fl., No. 316, Sec. 1, Neihu Rd., Neihu Chiu, Taipei, Taiwan 114, R.O.C

Date of Issue : December 30, 2005

Test required : FCC part 15 subpart B, Class A

ANSI C63.4 - 2001

The above equipment was tested by EMC compliance Testing Laboratory for compliance with the requirements of FCC Rules and Regulations.
The results of testing in this report apply to the product / system which was tested only.

M. S. Chung

Min-Seok Chung / Manager

Test Laboratory

EMC compliance, LTD
82-1 Jeil-ri, Yangji-myun, Yongin-city,
Kyunggi-do 449-825, Korea
Tel : 82 31 336 9919
Fax : 82 31 336 4767

EMI TEST REPORT

Test report no.: **EMC-FCC-0350**

Type of equipment: **DVR CARD**

Model Name: **GV2008**

Applicant: **GeoVision Inc.**

Manufacturer: **GeoVision Inc.**

Test standards: **FCC part 15 subpart B, Class A**

Test Procedure and Items

- **AC Power Line Conducted Emissions Measurement: ANSI C63.4-2001**
- **Radiated Emissions Measurement : ANSI C63.4:2001**

Testing Laboratory: EMC Compliance Ltd.

Test result : Complied

The above equipment was tested by EMC compliance Testing Laboratory for compliance with the requirements of FCC Rules and Regulations.
The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Date of test: 2005. 12. 23~26 **Date of Issue: 2005. 12. 30**

Tested by: KIM, DONG-MIN **Approved by:** CHUNG, MIN-SEOK

EMC Compliance Ltd.
82-1 JEIL-RI, YANGJI-MYUN, YONGIN-CITY, KYUNGGI-DO 449-825, KOREA
TEL: 82 31 336 9919 FAX : 82 31 336 4767
This test report shall not be reproduced except in full, Without the written approval.

[Contents]

1. Client information 3
2. Laboratory information 4
3. Test system configuration 5
3.1 Operation Environment 5
3.2 Measurement Uncertainty 5
3.3 Sample calculation 6
4. Description of E.U.T. 7
4.1 Product description 7
4.2 Peripherals 7
4.3 Used cables 8
4.4 E.U.T. test configuration 8
4.5 Operating conditions 8
5. Summary of test results 9
5.1 Modification to the E.U.T. 9
5.2 Standards & results 9
6. Test results 10
6.1 Conducted Emission 10
6.2 Radiated Emission 12
7. Test photographs 14
8. E.U.T. photographs 16
9. Appendix 18

This test report shall not be reproduced except in full, Without the written approval.

1. Client information

Applicant:	GeoVision Inc.
Address:	12FI., No. 316, Sec. 1, Neihu Rd., Neihu Chiu, Taipei, Taiwan 114, R.O.C
Telephone Number:	+ 886-2-8797-8377
Facsimile Number:	+ 886-2-8797-8335
Contact person:	George Tai

Manufacturer:	GeoVision Inc.
Address:	12FI., No. 316, Sec. 1, Neihu Rd., Neihu Chiu, Taipei, Taiwan 114, R.O.C
Telephone Number:	+ 886-2-8797-8377
Facsimile Number:	+ 886-2-8797-8335
Contact person:	George Tai

This test report shall not be reproduced except in full, Without the written approval.

2. Laboratory information

Address

EMC compliance Ltd.

82-1 JEIL-RI, YANGJI-MYUN, YONGIN-CITY, KYUNGGI-DO 449-825, KOREA

Telephone Number : 82 31 336 9919

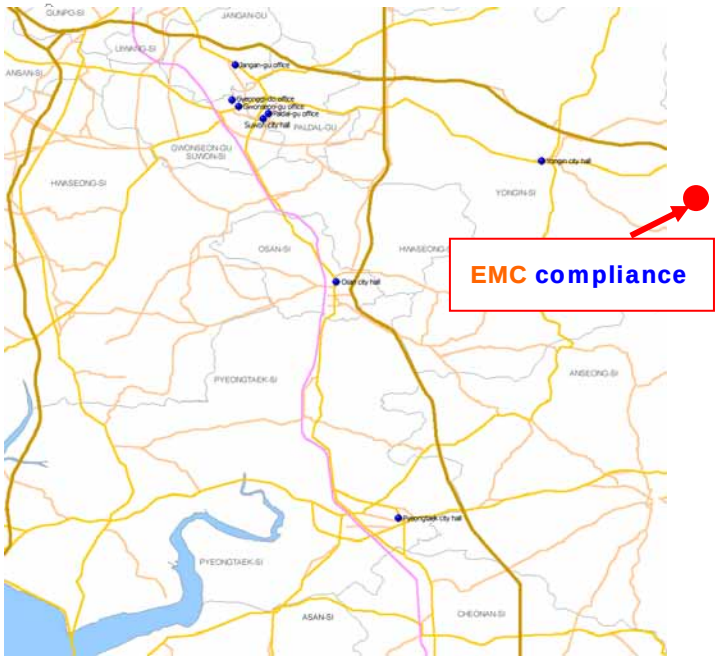
Facsimile Number : 82 31 336 4767

FCC Filing No. : 793334

VCCI Registration No. : C-1713, R-1606

KOLAS NO.:231

SITE MAP



This test report shall not be reproduced except in full, Without the written approval.

3. Test system configuration

3.1 Operation Environment

	Temperature	Humidity	Pressure
OATS :	15 °C	33 %	1010 hPa
Shielded room :	25 °C	37 %	1011 hPa

Test site

These testing were performed following locations;

Shielded Room: Conducted Emission
OATS (10m) : Radiated Emission

3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMI. The factors contributing to uncertainties are test receiver, Cable Loss, antenna factor calibration, Antenna directivity, antenna factor Variation with height, antenna phase center variation, antenna Frequency interpolation, measurement distance variation, Site imperfection, mismatching, and system repeatability.

Based on NIS 80, 81, the measurement uncertainty level with a 95% confidence level was applied.

This test report shall not be reproduced except in full, Without the written approval.

3.3 Sample calculation

Conducted Emission

The field strength is calculated by adding the LISN factor, cable loss from the measured reading.
The sample calculation is as follows :

FS = MR + LF + CL
MR = Meter Reading
LF = LISN Factor
CL = Cable Loss

If MR is 30dB, LISN Factor 2dB, CL 1dB
The result (MR) is

30 + 2 + 1 = 33dBuV

Radiated emission

The field strength is calculated adding the antenna Factor, cable loss and, Antenna pad adding, subtracting the amplifier gain from the measured reading.
The sample calculation is as follows :
FS = MR + AF + CL + AT –AG
MR = Meter Reading
AF = Antenna Factor
CL = Cable Loss
AP = Antenna Pad
AG=Amplifier Gain
If MR is 30dB, AF 12dB, CL 5dB, AP 10dB, AG 35dB
The result (MR) is
30 + 12 + 5 + 10 –35 = 22dBuV/m

This test report shall not be reproduced except in full, Without the written approval.

4. Description of E.U.T.

4.1 Product description

Applicant/ Manufacturer:	GeoVision Inc.
Address:	12FI., No. 316, Sec. 1, Neihu Rd., Neihu Chiu, Taipei, Taiwan 114, R.O.C
Type of approval:	Verification
Type of equipment:	DVR CARD
Basic Model:	GV2008
Serial number:	N/A

4.2 Peripherals

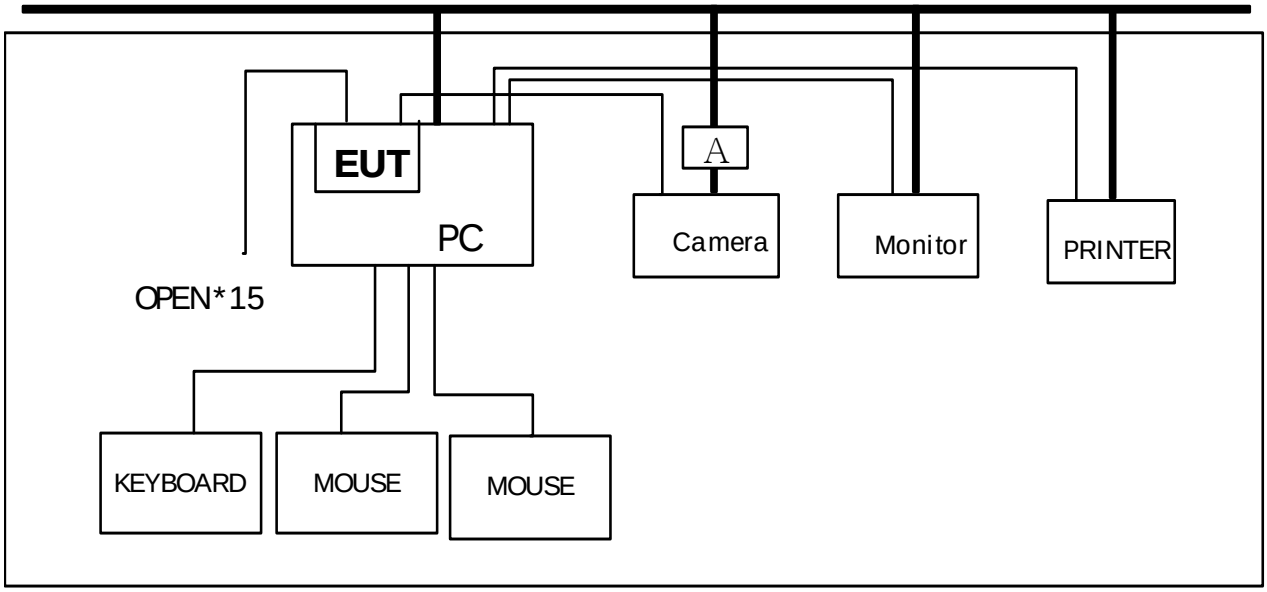
Description	Model / Part #	Serial number	Manufacture
Main Board	P4P 800	3AMM5L1054	ASUS
Power	ATX-250-12Z	134300B404002709	Bestec
HDD	Barracuta7200	5LT11C62	Seagate
Monitor	52S-S	N379HVEY216557V	SAMSUNG
Printer	EPSON STYLUS C60	DR5K014977	EPSON
Keyboard	SEM-DT35	51024367	SAMSUNG
Mouse	M071KC	501039656	DELL
Mouse	M056UO	504050893	DELL
CCD Camera	SOC-4020	N/A	SAMSUNG

This test report shall not be reproduced except in full, Without the written approval.

4.3 Used cables

Start		END		Cable Spec.	
Name	**I/O Port**	**Name**	**I/O Port**	**Length**	**Shield**
EUT	AV cable#1	OPEN	-	3.0	Shielded
	BNC cable#1	CCD Camera	BNC cable#1	3.0	Shielded
	AV cable#2~8	OPEN	-	1.5	Shielded
	BNC cable#2~8	OPEN	-	1.5	Shielded
	AV cable(EXT)	OPEN	-	1.5	Shielded

4.4 E.U.T. test configuration



4.5 Operating conditions

-Real video capture mode.

This test report shall not be reproduced except in full, Without the written approval.

5. Summary of test results

5.1 Modification to the E.U.T.

- None

5.2 Standards & results

FCC Part 15 Subpart B (Class A)
ANSI C63.4 – 2001

Test items	Test method	Result
Conducted emission		Pass
Radiated emission		Pass

This test report shall not be reproduced except in full, Without the written approval.

6. Test results

6.1 Conducted Emission

6.1.1 Measurement procedure

Mains

The measurements were performed in a shielded room.

EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.

The rear of table was located 0.4 m to the vertical conducted plane.

Each EUT power lead, except ground (safety) lead, was individually connected through a LISN to input power source.

Both lines of power cord, hot and neutral, were measured.

6.1.2 Used equipments

Equipment	Model	Serial No.	Makers	Next Cal. Date	Used
Test receiver	ESHS10	843276/003	R&S	06.05.13	☒
L.I.S.N.	ESH3-Z5	100267	R&S	06.06.17	☒
	L2-16A	0000J10705	PMM	06.11.30	☒
Test site	Shield room	-	-	-	☒

6.1.3 Measurement uncertainty

Conducted emission measurement : (k=2, 95%)

9kHz-150 kHz : ±3.47 [dB]

150kHz-300 MHz : ±3.01 [dB]

This test report shall not be reproduced except in full, Without the written approval.

6.1.4 Test data

Frequency	Correction Factor		Line	Quasi-peak			Average		
				Limit	Reading	Result	Limit	Reading	Result
[MHz]	LISN	Cable		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]
0.174	0.28	0.2	N	79.00	60.94	61.42	66.00	51.68	52.16
0.201	0.12	0.1	N		48.24	48.46		41.88	42.10
0.231	0.12	0.1	N		49.85	50.07		41.88	42.10
0.288	0.12	0.1	H		46.95	47.17		38.37	38.59
0.345	0.13	0.1	N		44.75	44.98		35.77	36.00
0.576	0.16	0.1	N	73.00	40.04	40.30	60.00	32.69	32.95
0.693	0.16	0.1	N		39.69	39.95		32.86	33.12
0.750	0.15	0.1	H		38.55	38.80		30.31	30.56
16.230	0.69	0.2	H		35.83	36.72		29.80	30.69
18.240	0.75	0.2	N		38.91	39.86		33.01	33.96

- Note. QP = Quasi-Peak, AV= Average
- Loss = LISN Loss + Cable Loss
- Measurement time : 1 s

6.1.5 Result

Minimum limit margin is 13.84 dB at 0.174 MHz.

This test report shall not be reproduced except in full, Without the written approval.

6.2 Radiated Emission

6.2.1 Measurement procedure

A pretest was performed at 3 m distance in a mini chamber for searching correct frequency.
The final test was done at a 10 m open area test site with a quasi-peak detector.
EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane.
They were folded back and forth forming a bundle 0.3 m to 0.4 m
long and were hanged at a 0.4 m height to the ground plane.
Cables connected to EUT were fixed to cause maximum emission.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization.
The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

6.2.2 Used equipments

Equipment	Model no.	Serial no.	Makers	Next cal. date	Used
Test receiver	EVSD	827864/006	R&S	06.05.14	☒
TRILOG Broadband Ant.	VULB 9160	9160-3149	SCHWARZBECK	06.10.10	☒
Antenna Mast	A109	N/A	DEAIL	-	☒
Turn Table	TS14	N/A	DEAIL	-	☒
10m OATS	-	-	EMC Compliance	-	☒

6.2.3 Measurement uncertainty

Radiated Emission measurement : (k=2, 95%)
30-300 MHz ; 3 m: ±3.69 [dB], 10 m: ±3.67 [dB]
300-1000 MHz ; 3 m: ±4.07 [dB], 10 m: ±3.41 [dB]

This test report shall not be reproduced except in full, Without the written approval.

6.2.4 Test data

Frequency [MHz]	Reading [dBuV/m]	Pol.	Height [m]	angle	Correction Factor		Limits [dBuV/m]	Result [dBuV/m]	Margin [dB]
					Antenna	Cable			
80.94	13.6	H	4.0	271	7.76	1.20	40.0	22.56	17.44
134.28	12.7	V	1.0	334	12.20	1.80	40.0	26.70	13.30
225.20	14.1	H	4.0	119	10.20	2.50	40.0	26.80	13.20
350.10	16.2	H	1.8	28	13.97	3.40	47.0	33.57	13.43
450.00	14.0	H	2.4	124	16.54	4.00	47.0	34.54	12.46
600.00	10.3	V	2.4	195	19.56	5.20	47.0	35.06	11.94
675.40	9.9	V	2.1	220	20.35	5.60	47.0	35.85	11.15
702.06	4.6	H	1.2	173	20.71	5.90	47.0	31.19	15.81
750.00	9.6	H	1.5	152	21.99	6.30	47.0	37.89	9.11
800.15	7.0	V	1.5	227	22.04	6.60	47.0	35.64	11.36
972.04	7.8	H	1.0	178	23.96	7.70	47.0	39.46	7.54

* Receiving Antenna Mode : *Horizontal, Vertical*

* 10 m OATS

* *Note : Reading = Test Receiver meter, P= Polarization → POL H = Horizontal, POL V = Vertical*

* *Result = Field Strength (Antenna factor + Cable factor + Reading)*

6.2.5 Result

Minimum limit margin is 7.54 dB at 972.04 MHz.

This test report shall not be reproduced except in full, Without the written approval.

7. Test photographs

Conducted emission

This test report shall not be reproduced except in full, Without the written approval.

Radiated Emission

EMC Compliance Ltd.
82-1 JEIL-RI, YANGJI-MYUN, YONGIN-CITY, KYUNGGI-DO 449-825, KOREA
TEL: 82 31 336 9919 FAX : 82 31 336 4767
This test report shall not be reproduced except in full, Without the written approval.

8. E.U.T. photographs

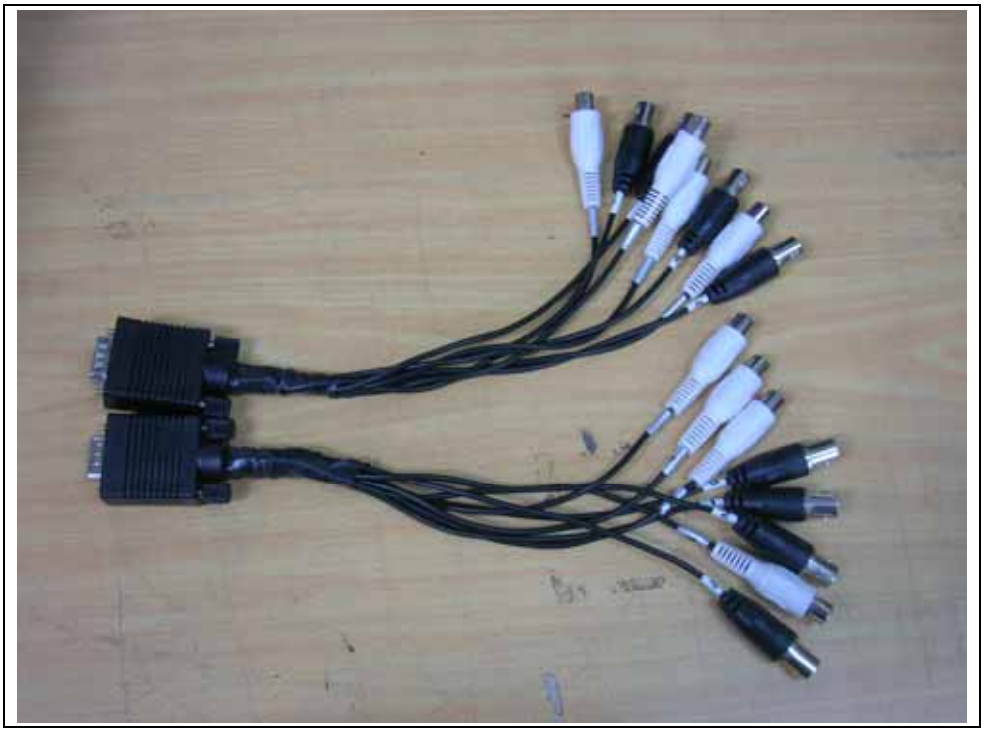
Front View

Rear View

This test report shall not be reproduced except in full, Without the written approval.

Inside

Cable



This test report shall not be reproduced except in full, Without the written approval.

9. Appendix

Conducted Emission test graphs

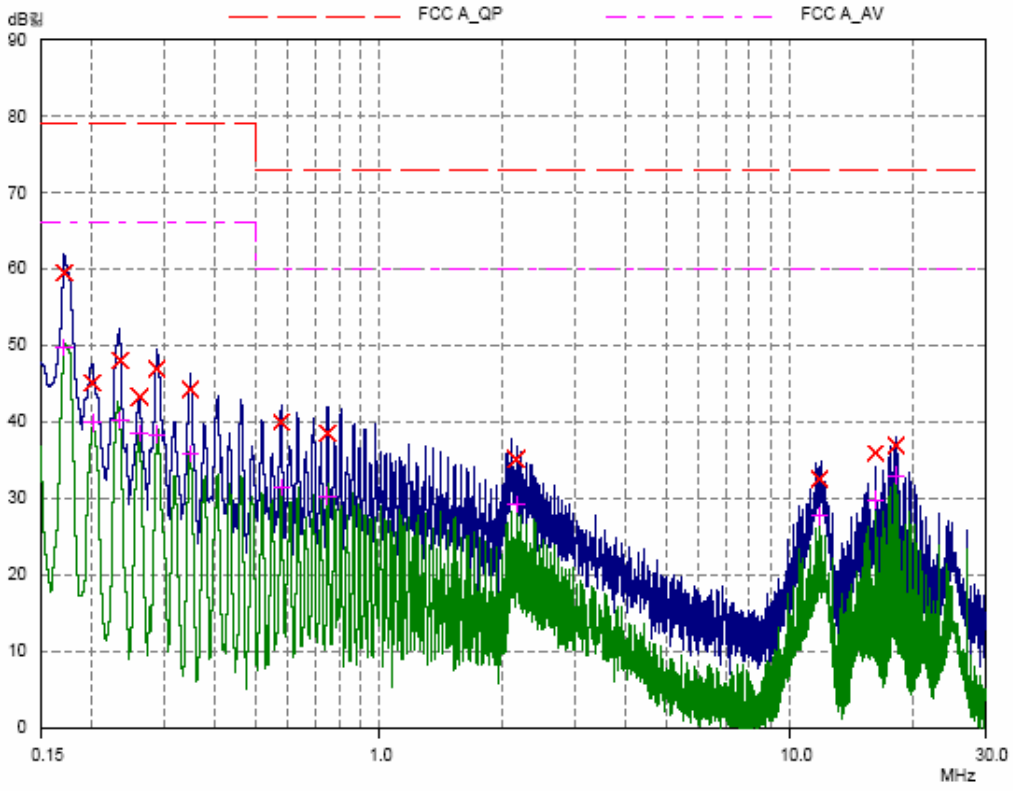
EUT: GV2008
Manuf: GEOVISION
Op Cond: H
Operator:
Test Spec: FCC Class A Conducted Emission
Comment:

Result File: 0512080h.dat : H

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	3MHz	3kHz	10kHz	PK+AV	10msec	Auto	OFF	60dB
3MHz	30MHz	10kHz	10kHz	PK+AV	5msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Peaks: 8
Acc Margin: 25 dB



This test report shall not be reproduced except in full, Without the written approval.

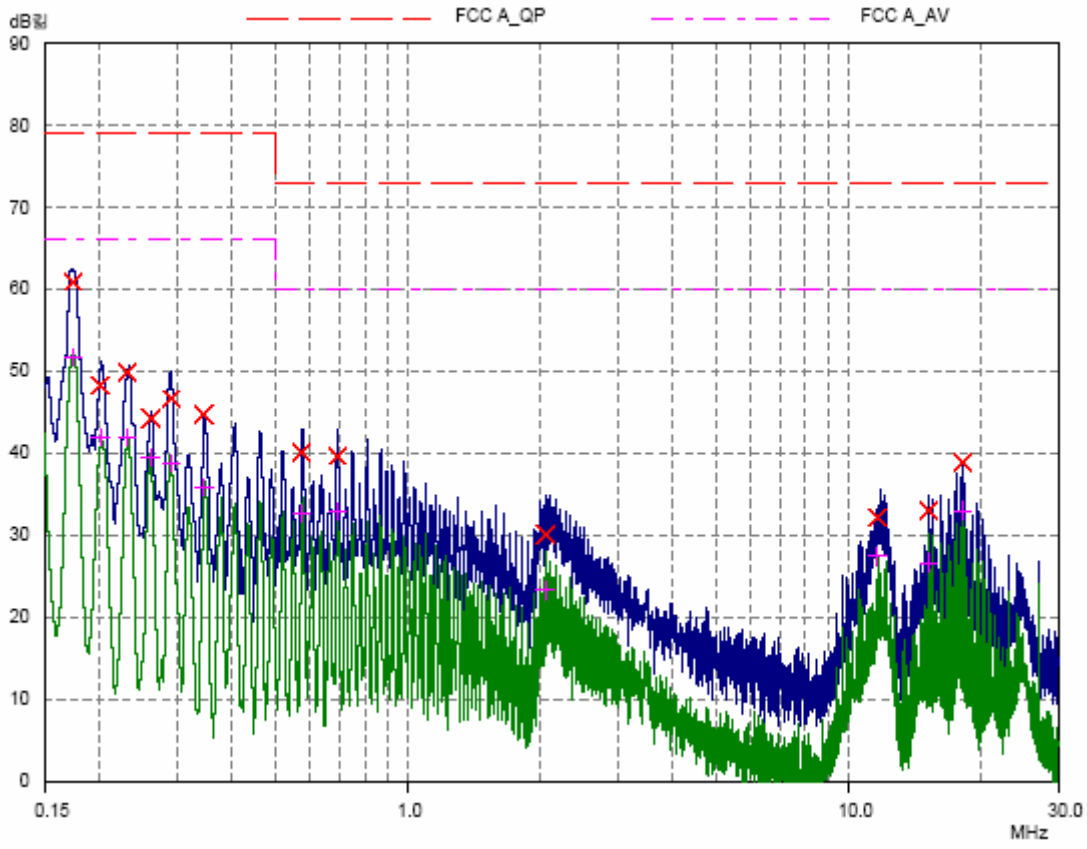
EUT: GV2008
Manuf: GEOVISION
Op Cond: N
Operator:
Test Spec: FCC Class A Conducted Emission
Comment:

Result File: 0512080n.dat : N

Scan Settings (2 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	3MHz	3kHz	10kHz	PK+AV	10msec	Auto	OFF	60dB
3MHz	30MHz	10kHz	10kHz	PK+AV	5msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Peaks: 8
Acc Margin: 25 dB



This test report shall not be reproduced except in full, Without the written approval.